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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

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IN THE MATTER OF :  
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:  
: ADMINISTRATIVE  
: ORDER  
: ON CONSENT  
  
CIBA-GEIGY SUPERFUND :  
SITE :  
:  
Ciba-Geigy Corporation :  
:  
Respondent, : Index No.  
: II-CERCLA-95-0105  
  
Proceeding Under Sections 104, 107 :  
and 122 of the Comprehensive :  
Environmental Response, Compensation :  
and Liability Act, as amended, :  
42 U.S.C. Sections 9604, 9607 and 9622 :  
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I. INTRODUCTION

1. This Order is entered into voluntarily by EPA and Respondent. The Order concerns the performance of Work and reimbursement for Past Response Costs and Future Response Costs incurred by EPA in connection with a Feasibility Study (FS) for the second operable unit, which consists of the Potential Source Areas at the Site in Toms River, New Jersey.

II. JURISDICTION

2. This Order is issued under the authority vested in the President of the United States by Sections 104, 107, 122(a), and 122(d)(3) of CERCLA, as amended, 42 U.S.C. Sections 9604, 9607, 9622(a), and 9622(d)(3). This authority was delegated to the Administrator of EPA by Executive Order 12580, 52 Federal Register 2923 (1987), and duly redelegated to the Regional Administrator, EPA Region II. Notice of this Order has been given to NJDEP.



3. The Respondent agrees to undertake all actions and make all payments required by the terms and conditions of this Order. Respondent agrees not to contest the authority or jurisdiction of the Regional Administrator to issue or enforce this Order, and agrees not to contest the basis or validity of this Order or any of its terms in any action by the United States or EPA to enforce this Order or to enforce a judgment relating to this Order.

### III. PARTIES BOUND

4. This Order shall apply to and be binding upon EPA, the Respondent, and its successors and assigns. The signatories to this Order certify that they are authorized to execute and legally bind the parties they represent to this Order. Any change in ownership or corporate status of the Respondent, including, but not limited to, any transfer of assets or real or personal property, shall in no way alter the Respondent's responsibilities under this Order.

5. The Respondent shall provide a copy of this Order to any prospective or subsequent owners or successors before Respondent's property rights, stock or assets are transferred. Respondent shall provide a copy of this Order to each contractor hired to perform the Work (as defined below) required by this Order and to each person representing the Respondent with respect to the Work, within fourteen (14) days after the effective date of this Order or the date such services are retained, whichever date occurs later. Respondent shall condition all contracts entered hereunder upon performance of the Work in conformity with the terms of this Order. Respondent or its contractors shall provide written notice of the Order to all subcontractors hired to perform any portion of the Work required by this Order. Respondent shall nonetheless be responsible for ensuring that its contractors and subcontractors perform the Work contemplated herein in accordance with this Order. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Respondent within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. Section 9607(b)(3).

### IV. DEFINITIONS

6. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

- a. CERCLA shall mean the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. Section 9601 et seq.

- b. Ciba Consent Decree shall mean the settlement captioned United States v. Ciba-Geigy Corporation, Civil Action No. 93-4675 (MLP) (hereinafter "Ciba Consent Decree"), that was entered by the federal district court of New Jersey on April 18, 1994.
- c. Cleanup Standards for Aquifer Restoration shall mean the cleanup standards, as set forth in the ESD and Ciba Consent Decree, to which the Upper Sand Aquifer and, if necessary, the Lower Sand Aquifer, will be remediated.
- d. Cleanup Standards for Groundwater Treatment shall mean the cleanup standards, as set forth in the ESD and Ciba Consent Decree, for discharging treated groundwater back into the Upper Sand Aquifer and, if necessary, the Lower Sand Aquifer.
- e. Day shall mean calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Order, where the last day would fall on Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next Working day.
- f. EPA shall mean the United States Environmental Protection Agency and any successor department or agencies of the United States.
- g. Explanation of Significant Differences or ESD shall mean the Explanation of Significant Differences relating to the first Operable Unit (OU 1) (groundwater) at the Site, issued on September 30, 1993, by the Regional Administrator, EPA Region II, and all attachments thereto.
- h. Feasibility Study shall mean those activities required in paragraphs 28 through 33 below.

- i. Future Response Costs shall mean all costs, including but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing, or enforcing this Order, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, and the costs incurred pursuant to Section XIV (Access) (including, but not limited to, attorney fees and the amount of just compensation). Future Response Costs shall also include all costs, including direct and indirect costs paid by the United States in connection with the Site between April 4, 1995 and the effective date of this Order.
- j. Group of Source Areas shall mean Potential Source Areas that are contiguous, separate or to which a similar or the same remedy(ies) may apply.
- k. Hazardous substance shall mean that term as defined in Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).
- l. NCP shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated by EPA pursuant to Section 105 of CERCLA, 42 U.S.C. Section 9605, codified at 40 C.F.R. Part 300, and all amendments or modifications thereto.
- m. NJDEP shall mean the New Jersey Department of Environmental Protection.
- n. Order shall mean Administrative Order on Consent Index No. II-CERCLA-95-0105, including the Statement of Work.
- o. Past Response Costs shall mean all costs, including but not limited to, direct and indirect costs that the United States incurred and paid with regard to the Site from April 18, 1994 through April 4, 1995, as set

forth in Paragraph 85 a. of this Order.

- p. Plume shall mean the vertical and horizontal extent of contaminated groundwater, including groundwater containing NAPL contaminants.
- q. Potential Source Area(s) shall mean the twenty-one (21) areas identified on page 7-3 of the EPA December 1994 Remedial Investigation Report as well as all additional areas or zones on the Site, including NAPL areas, containing Waste Materials that could potentially leach contaminants into the vadose zone or into the groundwater.
- r. RCRA shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. Section 6901 et seq. (also known as the Resource Conservation and Recovery Act).
- s. Record of Decision or ROD shall mean the EPA Record of Decision relating to the first Operable Unit (OU 1) (groundwater) at the Site issued on April 24, 1989, by the Regional Administrator, EPA Region II, and all attachments thereto.
- t. Respondent shall mean the Ciba-Geigy Corporation, an owner and operator of the Site.
- u. Site shall mean the former Toms River Chemical Corporation plant, now the Ciba-Geigy Corporation plant, formally designated on the NPL as the Ciba-Geigy Superfund Site, located in Toms River, Ocean County, New Jersey, as referred to in EPA's ROD, as modified by the 1993 ESD. The Site includes the areal extent of contamination where hazardous substances have migrated or are migrating, and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.
- v. Statement of Work or SOW shall mean the document attached to this Order as Appendix 1, including Attachment 1, which is incorporated into this Order by reference, and all provisions and schedules of which shall be enforceable as part of this Order.

- w. United States shall mean the United States of America, including EPA.
- x. Waste Material shall mean: (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. Section 9601 (14); and (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. Section 9601(33).
- y. Work shall mean all activities the Respondent is required to perform under this Order, in connection with a FS for the second operable unit (source areas) at the Site.
- z. Working Draft shall mean those drafts of submittals, and correspondence or memoranda related thereto, prepared by or for the Respondent prior to submittal to EPA or any other third party. Working drafts do not include drafts submitted to EPA.

#### V. FINDINGS OF FACT

7. The Site was owned and operated by the Toms River Chemical Corporation (TRCC) from 1955 to November 1981. Respondent, which is the successor to two of the owners of TRCC (CIBA States Limited and J. R. Geigy, S.A.) from 1955 to November 1981, is a party responsible for bearing costs of remediating the Site. From November 1981 to the present, the Site has been, and continues to be, wholly-owned and operated by Respondent.

8. On September 8, 1983, the Site was placed on the NPL, 40 CFR Part 300, Appendix B, which has been promulgated pursuant to Section 105(a)(8)(B) of CERCLA, 42 U.S.C. Section 9605(a)(8)(B).

9. The Site includes approximately 1400 acres, 320 of which are developed. In January 1985, EPA began its Remedial Investigation (RI) to determine the nature and extent of contamination at the Site and released an RI report in September 1986. The RI confirmed the presence of groundwater contamination at the Site and identified the consumption of contaminated groundwater as the principal health threat to residents at that time. EPA released a revised RI report in February 1988. The revised RI concluded that contaminant source areas on the Site contained significant concentrations of hazardous substances which contributed to groundwater contamination.

10. Among the chemicals and contaminants detected at the Site are: benzene, mono- di- and tri- chlorobenzene, tetrachloroethene, trichloroethene, toluene, arsenic, cadmium, chromium, copper and mercury. These constituents are hazardous substances as defined in Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).

11. A public health evaluation was performed for the Site by the Agency for Toxic Substances and Disease Registry (ATSDR). The Agency found that the potential human exposure pathways of concern were oral, dermal and inhalation exposure of contaminated residential well water and surface water in the marshland area and wetland area.

12. A draft Feasibility Study (FS) which examined alternatives for remediating the groundwater contamination was released to the public for comment on April 29, 1988. The remedial alternatives included a pump and treat system with discharge of treated groundwater to the Toms River or the Atlantic Ocean, and the recharge or reinjection of treated groundwater to the upper sand aquifer.

13. Pursuant to Section 117 of CERCLA, 42 U.S.C. Section 9617, EPA published notice of the completion of the RI/FS and the proposed plan for remedial action on June 23, 1988, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the RI/FS and the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Regional Administrator based the selection of the response action.

14. The decision by EPA on the groundwater remedial action to be implemented at the Site as a result of the RI/FS is embodied in EPA's ROD for a first operable unit (OU 1) (groundwater), on which the State had a reasonable opportunity to review and comment. The ROD includes a responsiveness summary which embodies EPA's responses to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA.

15. The ROD called for the extraction and treatment of contaminated groundwater and discharge to the Toms River. The ROD also called for sealing contaminated residential irrigation wells, monitoring groundwater and the Toms River, evaluating lower portions of the aquifer, performing pilot studies on contaminated groundwater to determine appropriate cleanup technologies, and a supplemental RI/FS to characterize adequately the nature and extent of the contaminant sources, both known and suspected.

16. On September 30, 1993, EPA issued an ESD in accordance with Section 117 (c) of CERCLA, 42 U.S.C. Section 9617 (c), and Section 300.435(c)(2)(i) of the NCP. The ESD modifies the ROD requirement for the discharge of treated

groundwater to the Toms River to require recharge to the upper portion of the Kirkwood Cohansey aquifer system (Upper Sand Aquifer) underlying the Site. In addition, with respect to the treatment of contaminated groundwater for all constituents, the ESD requires the achievement of Cleanup Standards for Groundwater Treatment and the achievement of Cleanup Standards for Aquifer Restoration. The documents which form the basis for the decision to modify the ROD have been incorporated into the Administrative record maintained for the Site in accordance with Section 300.835 (a)(2) of the NCP.

17. On April 18, 1994, the Ciba Consent Decree was entered by the federal district court in Newark, New Jersey. Pursuant to the Ciba Consent Decree, Ciba-Geigy agreed to undertake cleanup of the groundwater contamination at the Site and reimburse the United States for certain response costs specified in the Ciba Consent Decree in connection with operable units one and two at the Site.

18. In December 1994, EPA released a final RI Report that investigated Potential Source Areas of groundwater contamination at the Site.

## VI. CONCLUSIONS OF LAW AND DETERMINATIONS

19. The Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9).

20. Contaminants found at the Site and identified in the FINDINGS OF FACT above, are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), or constitute "any pollutant or contaminant" that may present an imminent and substantial danger to public health, welfare or the environment under Section 104(a)(1) and 106(a) of CERCLA, 42 U.S.C. Sections 9604 (a) (1) and 9606 (a).

21. The presence, migration, and potential migration of hazardous substances at the Site constituted actual and/or threatened "releases" into the "environment" as defined in Section 101(8) and (22) of CERCLA, 42 U.S.C. Sections 9601(8) and (22).

22. Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. Section 9601(21).

23. Respondent is a responsible party under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. Sections 9604, 9607 and 9622.



24. The actions taken by EPA in response to the release and/or threatened release of hazardous substances from the Site were necessary to protect public health, welfare or the environment, were in the public interest, and were not inconsistent with CERCLA and the NCP.

25. The actions required by this Order are necessary to protect the public health or welfare or the environment, are in the public interest, 42 U.S.C. Section 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S. C. S9622 (a) .

26. EPA has determined that the Respondent is qualified to conduct the FS and that such FS will be done properly and promptly and in accordance with the NCP and all other applicable regulations.

## VII. ORDER

27. Based on the foregoing FINDINGS and DETERMINATIONS, EPA hereby orders and Respondent has agreed to undertake an FS with respect to the Site and reimburse EPA for Past Response Costs and Future Response Costs as defined in this Order and in accordance with all of the terms and provisions stated below.

### Work To Be Performed

28. The Respondent shall finance and perform all activities required under this Order, as described in the SOW. The Work under this Order shall include, but not be limited to, the following:

#### Feasibility Study

29. Respondent shall submit to EPA for review and approval the deliverables set forth in Attachment 1 of the SOW and in accordance with the timetable in Attachment 1 of the SOW, for the performance of an FS with respect to the Site. The FS deliverables shall provide for the performance of the FS in conformance with the SOW and the requirements of CERCLA (including, but not limited to, Section 121 of the Act) and the NCP, as well as applicable EPA guidance documents relating to the performance of feasibility studies under CERCLA.

30. a. EPA will either approve, approve with conditions, disapprove or require modifications of each FS deliverable in accordance with the procedures set forth in Paragraphs 34 through 39 of this Order. Respondent shall amend the FS deliverable

as required by EPA's comments or as otherwise agreed upon by EPA in writing, and shall submit the amended FS deliverable to EPA within thirty (30) days of receipt of EPA's comments, or such longer time as agreed upon by EPA and the Respondent, subject to its right to invoke the procedures set forth in Section XXI (Dispute Resolution).

b. At such time as EPA determines that the FS deliverable is acceptable, EPA will transmit to Respondent a written statement to that effect.

31. Respondent shall perform the FS in conformance with the EPA-approved FS deliverables and the schedule(s) contained therein.

32. EPA may determine that in addition to Work identified in the SOW, other additional work may be necessary to accomplish the objectives of the FS. EPA may require, pursuant to this Order, that Respondent perform this work in addition to those required by the SOW, if EPA determines that such additional work is necessary to complete the FS. Respondent shall implement the additional work that EPA determines is necessary. The additional work shall be completed according to the standards, specifications and schedule set forth or approved by EPA in a written modification to the FS Work Plan.

EPA reserves the right to conduct the work itself at any point, to seek reimbursement for the costs associated with the work from Respondent, and/or to seek any other appropriate relief. Respondent may invoke the procedures set forth in Section XXI (Dispute Resolution) to dispute EPA's determination that additional work is necessary to accomplish the objectives of the FS. Such a dispute shall be resolved pursuant to Section XXI of this Order.

33. EPA will make the final selection of the remedial alternative(s) to be evaluated and implemented with respect to the Site.

#### VIII. EPA REVIEW OF SUBMISSIONS

34. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Order and the SOW, EPA, after reasonable opportunity for review and comment by the State, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that the Respondent modify the submission; or (e) any combination of the above.

35. If EPA approves a submittal required by this Order, EPA will so inform Respondent in writing. Any approval by EPA that is not in writing shall not be effective or binding upon EPA.

36. a. If EPA disapproves a submittal, Respondent shall, within thirty(30) days, or such longer time as agreed upon by EPA and the Respondent, correct the deficiencies and resubmit the plan, report or other item for approval, subject to its right to invoke the procedures set forth in Section XXI (Dispute Resolution). Notwithstanding the notice of disapproval, Respondent shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submittal, except where EPA determines that such action, in light of the deficient portion, is impracticable.

b. In the event that any comment on any submittal required pursuant to this Order is not incorporated to EPA's satisfaction in the subsequent submittal by Respondent, Respondent may be deemed in violation of this Order. If EPA does not approve the subsequent submittal or portion of the submittal, EPA may unilaterally amend or modify the submittal. Respondent shall implement any such submittal as amended or developed by EPA, subject to its right to invoke the procedures set forth in Section XXI (Dispute Resolution). EPA may, in its sole discretion, engage in discussions with Respondent and/or its contractors to resolve technical issues raised by EPA comments made pursuant to this paragraph. EPA may modify its comments and/or extend the due date for a subsequent submittal as a consequence of such discussions.

37. Upon EPA written approval of any submittal pursuant to this Order, Respondent shall proceed to take any action required by the submittal, as approved by EPA and in accordance with applicable schedules.

38. Upon EPA written approval with conditions of any submittal pursuant to this Order, Respondent shall proceed to take any action required by the submittal, as conditionally approved by EPA and in accordance with applicable schedules, subject only to its right to invoke the procedures set forth in Section XXI (Dispute Resolution).

39. Upon written approval by EPA, any submittal pursuant to this Order or the SOW shall be deemed incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order.

## IX. EPA PROJECT MANAGER AND RESPONDENT'S PROJECT COORDINATOR

### Identification of EPA Project Manager

40. Within fifteen (15) days of the effective date of this Order, EPA will designate a Project Manager to monitor the progress of the Work and to coordinate communication between EPA and the Respondent. EPA may also designate an alternate representative.

41. EPA's Project Manager shall have the authority set forth in 40 C.F.R. Section 300.120. The Project Manager shall have the authority to require a cessation of the performance of any activity at the Site that, in the Project Manager's opinion, may constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of hazardous substances from the Site. If the Project Manager suspends any activity at the Site, EPA may extend the compliance schedule of this Order, as appropriate. EPA shall notify the Respondent in writing of any extension of time. In addition, the Project Manager shall have the authority to take any necessary response action.

42. The Project Manager may authorize field modifications to the studies, designs, techniques or procedures undertaken or utilized in performing the Work required under this Order, provided that any such modifications are consistent with the SOW attached to this Order. If Respondent desires a field modification, it must submit a written request to EPA. All such field modifications must be approved in writing and signed by the Project Manager.

43. EPA has the unreviewable right to change its Project Manager. If EPA changes its Project Manager, EPA will inform Respondent in writing of the name, address, and telephone number of the new Project Manager.

44. The Project Manager may assign other representatives, including but not limited to, other qualified EPA employees, contractors and subcontractors, to serve as his or her representative for oversight of performance of daily operations during implementation of the Work.

45. The absence of EPA's Project Manager from the Site shall not delay or stop any portion of the Work.

### RESPONDENT'S PROJECT COORDINATOR

46. Within 15 days of the effective date of this Order, Respondent will designate a Project Coordinator and provide written notice to EPA of its designation.

47. The Respondent's Project Coordinator shall be responsible for the day-to-day management of all Work to be performed in accordance with this Order. The Project Coordinator shall have adequate technical and managerial experience to manage all Work described in the SOW and in accordance with this order, including having knowledge of all activities at the Site. The Project Coordinator shall be the primary contact for EPA on all matters relating to Work at the Site and should be available for EPA to contact during all working days.

48. Notice by EPA to the Project Coordinator shall be deemed notice to the Respondent for all matters relating to the Work under this Order.

49. If at any time Respondent proposes to use a different Project Coordinator, Respondent shall provide written notice of the proposed change to EPA at least fifteen (15) days prior to such proposed change and shall obtain written approval from EPA before the new Project Coordinator assumes any responsibilities under this Order.

50. EPA will review Respondent's selection of a Project Coordinator according to the terms of this paragraph. If EPA disapproves the selection of the Project Coordinator, Respondent shall submit to EPA within fifteen (15) days after receipt of EPA's disapproval of the Project Coordinator previously selected, a list of Project Coordinators, including primary support entities and staff, that would be acceptable to Respondent. EPA will thereafter provide written notice to Respondent of the names of the Project Coordinators that are acceptable to EPA. Respondent may then select any approved Project Coordinators from that list and shall notify EPA of the name of the Project Coordinator selected within fifteen (15) days of EPA's designation of approved Project Coordinators. EPA's disapproval of Respondent's Project Coordinator is subject to the procedures set forth in Section XXI (Dispute Resolution).

### X. NOTIFICATION AND REPORTING REQUIREMENTS

51. Respondent shall verbally notify EPA at least 15 days prior to conducting significant field events as described in the SOW.

52. Respondent shall provide notice to local officials and other agencies prior to the start of any Work at the Site in accordance with applicable federal, state and local laws.

53. In addition to other deliverables set forth in this Order, Respondent shall submit to EPA and NJDEP every two months written progress reports with respect to the Work that: (a) describe the actions which have been taken toward achieving compliance with this Order since the previous progress report; (b) include a summary of all sampling and test results and activities since the previous progress report; (c) identify all Work plans, plans and other deliverables required by this Order completed and submitted since the previous progress report; (d) describe all actions, including, but not limited to, data collection and implementation of Work plans, which are scheduled for the next six weeks and provide other information relating to the progress of the Work; (e) identify and include previously unsubmitted information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the Work plans or other schedules that Respondent has proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Relations Plan since the previous progress report and those to be undertaken in the next six weeks. Respondent shall submit these progress reports to EPA and the State by the tenth day of every other month following the effective date of this Order. Respondent's obligation to submit progress reports continues until EPA gives Respondent written notice under this Order ending this requirement.

54. If requested by EPA, Respondent shall also provide briefings for EPA to discuss the progress of the Work.

55. The Respondent shall notify EPA of any change in the schedule described in the bimonthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of Work plans, no later than seven days prior to the performance of the activity.

56. All reports and other documents submitted by Respondent to EPA (other than the bimonthly progress reports referred to above) which purport to document the Respondent's compliance with the terms of this Order shall be signed by an authorized representative of the Respondent.

57. EPA will notify the Respondent in writing, if EPA determines that a progress report is incomplete or deficient.

58. If EPA determines that a progress report is incomplete or deficient, Respondent shall make the necessary revisions and resubmit the revised progress report with the next scheduled progress report or, if the next scheduled progress report is due less than seven (7) days following Respondent's receipt of the notice of deficiency, with the subsequently scheduled progress report.

59. Three copies of all Work plans, reports, and any other documents required to be submitted to EPA under this Order shall be sent by certified mail, return receipt requested, or express delivery to the following address:

Chief, New Jersey Superfund Branch  
Emergency & Remedial Response Division  
U.S. Environmental Protection Agency, Region II  
290 Broadway, Floor 19  
New York, NY 10007-1866  
Attn: Ciba-Geigy Project Manager

A copy of all written communications (without enclosures) shall also be sent to:

Chief, New Jersey Superfund Branch  
Office of Regional Counsel  
U.S. Environmental Protection Agency  
290 Broadway, Floor 17  
New York, N.Y. 10007-1866  
Attn: Ciba-Geigy Site Attorney

60. In the event that EPA requests more than the number of copies stated above of any report or other documents required by this Order, Respondent shall provide the number of copies requested.

#### XI. SAMPLING, DATA AVAILABILITY/ADMISSIBILITY AND ACCESS

61. A summary of all sampling, tests, modeling or other activities generated by Respondent, or on Respondent's behalf, during implementation of this Order, shall be submitted to EPA in the subsequent bimonthly progress report as described in Section X of this Order. Upon request by EPA, Respondent shall provide the data and/or results of all sampling, tests, modeling, or other activities generated by Respondents, or on Respondent's behalf during implementation of this Order.

62. At EPA's verbal or written request, Respondent shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) of any

samples collected by the Respondent in implementing this Order. All split samples of Respondent shall be analyzed by the methods identified in the QAPP.

63. In entering into this Order, Respondent waives any objections to any data gathered, generated, or evaluated by EPA, the state or Respondent in the performance or oversight of the Work that has been verified according to the quality assurance/quality control (QA/QC) procedures required by the Order or any EPA-approved Work plans or sampling and analysis plans subject to Respondent's right to invoke the procedures set forth in Section XXI (Dispute Resolution).

64. Commencing upon the effective date of this Order, the Respondent agrees to provide the United States, and its representatives, including EPA and its contractors, access at all reasonable times to the Site and any other property to which access is required for the implementation of this Order, to the extent access to the property is controlled by the Respondent, for the purposes of conducting any activity related to this Order, including but not limited to, inspecting conditions, activities, and results of activities, records, operating logs, and contracts related to the Site or Respondent and its contractor pursuant to this Order; reviewing the progress of the Respondent in carrying out the terms of this Order; conducting tests as EPA or its authorized representatives deem necessary; using a camera, sound recording device or other documentary type equipment; and verifying the data submitted to EPA by the Respondent. The Respondent shall allow these persons to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to Work undertaken in carrying out this Order. All parties with access to the Site under this paragraph shall comply with all approved health and safety plans.

65. a. The Respondent may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Order under 40 C.F.R. Section 2.203, provided such claim is allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. Section 9604(e)(7). This claim shall be asserted in the manner described by 40 C.F.R. Section 2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the state without further notice to the Respondent. Respondent agrees not to assert confidentiality claims with respect to any data related to Site conditions, sampling, or monitoring.

b. The Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent asserts such a privilege in lieu of providing documents, it shall provide EPA with the following: (1) the title of the



document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Settling Defendant. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

66. To the extent that the Site or any other property to which access is required for the implementation of this Order is owned or controlled by persons other than Respondent, Respondent shall use best efforts to secure from such persons access for Respondent, as well as for EPA and the State and their representatives, including, but not limited to, its contractors, as necessary to effectuate this Order. For purposes of this Paragraph "best efforts" includes the payment of reasonable sums of money in consideration of access. If any access required to complete the Work is not obtained within 45 days of the date of the effective date of this Order, or within 45 days of the date EPA notifies the Respondent in writing that additional access beyond that previously secured is necessary, Respondent shall promptly notify EPA, and shall include in that notification the following: 1) a summary of the steps Respondent has taken to attempt to obtain access and 2) the amount of money offered by Respondent to the owner(s) or lessee(s) of the property in consideration for such access. EPA may, as it deems appropriate, assist Respondent in obtaining access and may notify Respondent of its intent to assist in obtaining access. Notwithstanding any such notification, nothing in this Order shall preclude the United States or EPA from taking any action to obtain access at any time subsequent to any such notification to Respondent. Respondent shall reimburse EPA in accordance with the procedures in Section XIX (Reimbursement of Response Costs), for all Future Response Costs, including, but not limited to, attorneys fees and the amount of just compensation, incurred by the United States in obtaining access.

67. Notwithstanding any provision of this Order, the United States retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

## XII. COMPLIANCE WITH APPLICABLE LAWS

68. All Work conducted pursuant to this Order shall be performed in accordance with prevailing professional standards.

69. Respondent shall comply with all applicable provisions of the NCP, 40 C.F.R. 300 et seq. and all other applicable Federal and State statutes and regulations while performing all of the Work required by this Order. The activities conducted

pursuant to this Order, if approved by EPA, shall be considered to be consistent with the NCP.

70. Respondent shall comply with all applicable Federal and State health and safety requirements by all workers and agents of Respondent who enter the Site, including compliance with all applicable regulations of the Occupational Safety and Health Administration, as contained in 29 C.F.R. Section 1910 et seq. and elsewhere.

71. Respondent shall be responsible for obtaining all necessary permits, licenses, and other authorizations needed to carry out the Work required by this Order. However, no local, state, or federal permit shall be required for any portion of any action conducted entirely on-site, including studies, where such action is selected and carried out in compliance with Section 121 of CERCLA.

### XIII. RECORD PRESERVATION

72. a. Until 10 years after the Respondent's receipt of EPA's notification pursuant to the Ciba Consent Decree, Paragraph 46 b. of Section XV (Certification of Completion of the Work), Respondent shall 1) preserve and retain all records and documents, excluding Working Drafts, now in its possession or control or which come into its possession or control that relate in any manner to the performance of Work pursuant to this Order and 2) instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description, excluding Working Drafts, relating to the performance of the Work in this Order.

b. Respondent shall preserve and retain records and documents now in its possession or control or which come into its possession or control that relate in any manner to the liability of any person for response actions conducted and to be conducted at the Site, regardless of any corporate retention policy to the contrary, as follows:

(1) With respect to documents produced or obtained in the course of discovery in the litigations Ciba-Geigy Corporation v. Liberty Mutual Insurance Co., pending in the Superior Court of New Jersey, Law Division, Union County, and Ciba-Geigy Corporation v. Sandoz Ltd., et al., pending in the United States District Court for the District of New Jersey, Respondent shall preserve and retain such records and documents for the pendency of those litigations or seven years from the entry date of the Ciba Consent Decree, whichever is later. At the end of such period, at least 180 days prior to any destruction or discarding of such records and documents, Respondent shall submit to EPA an index of all records and documents that have been retained pursuant to this paragraph that Respondent believes are (a) not material or relevant to this action, or (b) are cumulative of other documents to be

retained with respect to the issue of any person's liability for response actions at the Site, and that Respondent proposes to destroy or discard. EPA shall review the index to determine if Respondent may destroy or discard, in whole or in part, the records and documents identified in the index.

(2) With respect to all records and documents as identified pursuant to subparagraph b.1. and not destroyed or discarded pursuant to subparagraph b.1, above, all such remaining documents and records shall be retained and preserved as provided in paragraph 72 (a).

(3) With respect to documents that Respondent now possesses or controls or that come into Respondent's possession or control in the future (a) that relate in any manner to the liability of any person for response actions conducted and to be conducted at the Site and (b) that are not documents produced or obtained in the course of discovery in the litigations identified in subparagraph B.1. above, Respondent shall retain and preserve such documents as provided in paragraph 72 (a).

c. For purposes of this paragraph, records and documents are deemed preserved and retained if at least one (1) reproducible original or copy (whether an electronic or optical record, paper copy or microfilm) is preserved and retained. With respect to records and documents relating to the performance of the Work, Respondent and its contractors and agents need not preserve Working Drafts.

73. At the conclusion of any applicable document retention period, Respondent shall notify the United States, including EPA, at least 90 days prior to the destruction of any such records or documents, and, upon request by the United States, Respondent shall deliver any such records or documents to EPA.

74. Respondent hereby certifies that it has not altered, mutilated, discarded, destroyed or otherwise disposed of any material records, documents or other information relating to its potential liability regarding the Site since notification of potential liability by the United States or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA and Section 3007 of RCRA.

#### XIV. FORCE MAJEURE

75. a. Respondent's activities under this Order shall be performed within the time limits set forth herein or otherwise established or approved by EPA, unless performance is delayed by events that constitute a force majeure. For the purposes of this Order, a force majeure is defined as any event arising from causes entirely

beyond the control of Respondent or Respondent's contractors and subcontractors, notwithstanding Respondent's best efforts to avoid the delay. The requirement that the Respondent exercise "best efforts to avoid the delay" includes using best efforts to anticipate a potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay and any effects of a delay is minimized to the greatest extent practicable. Increased costs or expenses of any Work to be performed under this Order or the financial difficulty of Respondent to perform such Work shall not constitute a force majeure.

b. Respondent shall orally notify EPA as soon as possible, but in no event later than four days after Respondent became aware or should have become aware of any circumstances which have occurred or which are likely to occur which would constitute a force majeure. Respondent will notify the Project Manager in writing no later than five days after Respondent became aware of or should have become aware of the event which would or could constitute a force majeure under this paragraph. Such notification to EPA shall not relieve Respondent of any of its obligations under this Order. Failure by Respondent to provide either the oral notice or the written notice to EPA as required by this paragraph shall act as a waiver to assert the occurrence of a force majeure as a defense to any proceedings for stipulated penalties under this Order. Respondent shall be deemed to have notice of any circumstances of which its contractors or subcontractors were aware or should have been aware.

c. In its notice letter to EPA, Respondent shall fully describe the nature of the delay; the expected duration of the delay; the actions taken or to be taken to mitigate the delay; the timetable within such actions to mitigate any further delay will be taken; the Respondent's rationale for attributing such delay to force majeure event; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to the public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure.

d. Respondent shall have the burden of proving that any requirement of this Order is excused by this force majeure provision. If EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Order that are affected by the force majeure event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify Respondent in writing. Respondent may invoke the procedures set forth in Section XXI (Dispute Resolution) to dispute EPA's

determination that the delay or anticipated delay has been or will be caused by a force majeure event.

#### XV. MODIFICATIONS TO THIS ORDER

76. Respondent may request that EPA approve modification(s) to the EPA-approved FS Work Plan or FS Report at any time during the implementation of the Work required by this Order. All such modifications to this Order must be approved in writing signed by the Chief (or any successor designee), New Jersey Superfund Branch I, Emergency and Remedial Response Division, EPA Region II. EPA shall have sole authority to make any modification(s) to the EPA-approved FS Work Plan or FS Report and all Work which shall be required under this Order.

77. This Order may be modified by mutual agreement of EPA and Respondent. All modifications to this Order shall be in writing and signed by Respondent and by the Chief (or any successor designee), New Jersey Superfund Branch I, Emergency and Remedial Response Division, EPA Region II, and shall have as their effective date that date on which such modifications are signed by the Chief. Such modifications shall be deemed to be incorporated in and enforceable as part of this Order.

78. No informal advice, guidance, suggestions or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Respondent shall be construed to relieve Respondent of any of its obligations under this Order, including its obligation to obtain formal approval as may be required by this Order. Any deliverables, plans, technical memoranda, reports (other than progress reports), specifications, schedules and attachments required by this Order are, upon approval by EPA, incorporated into this Order.

#### XVI. QUALITY ASSURANCE

79. Respondent shall assure that Work performed, samples taken and analysis conducted conform to the requirements of the Statement of Work, the QAPP and guidance identified therein. Respondent will assure that field personnel used by Respondent are properly trained in the use of field equipment and in chain of custody procedures.

## XVII. ASSURANCE OF ABILITY TO COMPLETE THE WORK

80. At the time the Respondent submits to EPA its assurance of ability to complete work pursuant to Section XIV, Paragraph 44 of the Ciba Consent Decree, Respondent shall also establish and maintain financial security in the amount of \$20,000,000 in one of the following forms:

- (a) A surety bond guaranteeing performance of the Work;
- (b) One or more irrevocable letters of credit equalling the total estimated cost of the Work;
- (c) A trust fund;
- (d) A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with the Respondent; or
- (e) A demonstration that the Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

81. If the Respondent seeks to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 80(d) of this Order, Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Respondent seeks to demonstrate its ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 80(d) or (e), it shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually for the portion of the total cost not yet expended, on the anniversary of the effective date of this Order. In the event that EPA determines at any time that Respondent has not met the financial assurance requirements provided pursuant to this Section, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 80 of this Order or cure the deficiency. Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Order.

## XVIII. INDEMNIFICATION AND INSURANCE

82. The United States does not assume any liability by entering into this agreement or by virtue of any designation of Respondent as EPA's authorized representatives under Section 104(e) of CERCLA. Respondent shall indemnify, save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Order,

including, but not limited to, any claims arising from any designation of Respondent as EPA's authorized representatives under Section 104(e) of CERCLA. Further, the Respondent agrees to pay the United States all costs it incurs including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Order. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Order. Neither the Respondent nor any such contractor shall be considered an agent of the United States.

83. Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

84. No later than 15 days before commencing any on-site Work, Respondent shall secure, and shall maintain until the first anniversary of EPA's written notice that the requirements of this Order have been satisfied pursuant to Paragraph 115, comprehensive general liability insurance with a limit of \$3,000,000 and automobile insurance with a limit of \$1,000,000 dollars, combined single limit naming as additional insured the United States. In addition, for the duration of this Order, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Order. Prior to commencement of the Work under this Order, Respondent shall provide to EPA certificates of such insurance and a copy of each insurance policy. Respondent shall resubmit such certificates and copies of policies each year on the anniversary of the effective date of this Order. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Respondent need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

## XIX. REIMBURSEMENT

85. a. Within 30 calendar days of the effective date of this Order, Respondent shall pay to EPA \$796,867.42 in reimbursement of Past Response Costs, by Electronic Funds Transfer (EFT or wire transfer) to EPA. Payment shall be made in accordance with instructions (EPA Form 2570-6) provided by EPA to the Respondent. Respondent and EPA agree that a printout of cost data in EPA's financial management system (SCORES) report and a calculation of EPA's indirect costs, shall serve as the sole basis for payment demands by EPA.

b. Within 48 hours of the transfer specified in paragraph 85 a., above, Respondent shall provide copies of its federal reserve wire number and any other documentation which will confirm payment of the above amount, to EPA's Project Manager and Staff Attorney for the Site, at the addresses specified below:

New Jersey Superfund Branch I  
Emergency and Remedial Response Division  
United States Environmental Protection Agency, Region 2  
290 Broadway, Floor 19  
New York, New York 10007-1866  
Attn: Stephen Cipot, Ciba-Geigy Superfund Site  
Project Manager

Office of Regional Counsel  
New Jersey Superfund Branch  
United States Environmental Protection Agency, Region 2  
290 Broadway, Floor 17  
New York, New York 10007-1866  
Attention: Bruce H. Aber, Ciba-Geigy Superfund Site  
Staff Attorney

86. At various time after the effective date of this Order, EPA will submit to Respondent a bill for payment of Future Response Costs. The billings will be accompanied by a printout of cost data in EPA's financial management system (SCORES) report that shall serve as the sole basis for payment demanded by EPA. Respondent, shall within forty-five days of receipt of such demand, reimburse such costs. Respondent shall not demand any additional documentation beyond that specified in this paragraph, as a prerequisite for making any payments demanded by



EPA for Future Response Costs. Respondent shall pay the amount demanded by EPA, in reimbursement of Future Response Costs, by Electronic Funds Transfer (EFT or wire transfer). Payment shall be made in accordance with instructions (EPA Form 2570-6) provided by EPA to the Respondent. Within 48 hours of this transfer, Respondent shall provide copies of its federal reserve wire number and any other documentation which will confirm payment of the amount of Future Response Costs, to EPA's Project Manager and Staff Attorney for the Site, at the addresses specified in Paragraph 85 b., above.

87. Respondent agrees to limit any disputes concerning Future Response Costs to accounting errors and the inclusion of costs outside the scope of this Order. Said disputes will be subject to the Dispute Resolution provisions set forth in Section XXI. Respondent shall identify any contested costs and the basis of its objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule set forth above. Simultaneously, the Respondent shall establish an interest bearing account in a federally-insured bank duly chartered in the State of New Jersey and remit to the escrow account funds equivalent to the amount of the contested Future Response Costs. Respondent bears the burden of establishing an EPA accounting error or the inclusion of cost outside the scope of this Order.

#### XX. INTEREST FOR LATE PAYMENT

88. In the event that the payments required by Paragraph 85 a. are not made within thirty (30) days of the effective date of this Order or the payments required by Paragraph 86 are not made within thirty (30) days of the Respondent's receipt of the bill, Respondent shall pay interest on the unpaid balance at the rate established pursuant to Section 107(a) of CERCLA, 421 U.S.C. Section 9607(a). The interest to be paid on Past Response Costs shall begin to accrue on the effective date of the Order. The interest on Future Response Costs shall begin to accrue on the date of the Respondent's receipt of the bill. Interest shall accrue at the rate specified through the date of the Respondent's payment. Payments of interest made under this Paragraph shall be in addition to such other remedies or sanctions available to EPA by virtue of Respondent's failure to make timely payments under Section XIX Reimbursement of Costs.

89. Payment of Interest Under this Section or Penalties under Section XXII, below, shall not alter Respondent's obligation to comply with this Order.

## XXI. DISPUTE RESOLUTION

90. Any disputes concerning activities or deliverables required under this Order, for which dispute resolution has been expressly provided, shall be resolved as follows: If the Respondent objects to any EPA notice of disapproval or requirement made pursuant to this Order, Respondent shall notify EPA's Project Manager in writing of its objections within 14 days of receipt of the disapproval notice or requirement. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent certified mail, return receipt requested. EPA and the Respondent then have an additional 20 days to reach agreement. If an agreement is not reached within 20 days, Respondent may request a determination by EPA's Director of the Emergency and Remedial Response Division (ERRD), EPA Region II. The Director's determination is EPA's final decision. Respondent shall proceed in accordance with EPA's final decision regarding the matter in dispute, regardless of whether Respondent agrees with the decision. If the Respondent does not agree to perform or does not actually perform the Work in accordance with EPA's final decision, EPA reserves the right in its sole discretion or conduct the Work itself, to seek reimbursement from the Respondent, to seek enforcement of the decision, to seek stipulated penalties, and/or to seek any other appropriate relief.

91. Respondent is not relieved of its obligations to perform and conduct activities and submit deliverables on the schedule set forth in the Work plan(s), while a matter is pending in dispute resolution. The invocation of dispute resolution does not stay stipulated penalties under this Order.

## XXII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

92. For each day that the Respondent fails to complete a deliverable in a timely manner or fails to produce a deliverable of acceptable quality, or otherwise fails to perform Work in accordance with the requirements of this Order, Respondent shall be liable for stipulated penalties, subject to Respondent's right to invoke the procedures set forth in Section XXI (Dispute Resolution). Penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. Where a revised submission by Respondent is required, stipulated penalties shall continue to accrue until a satisfactory deliverable is produced. EPA will provide written notice for violations that are not based on timeliness; nevertheless, penalties shall accrue from the day a violation commences. Payment shall be due within 30 days of receipt of a demand letter from EPA.

93. Respondents shall pay interest on the unpaid balance, which shall begin to accrue at the end of the 30-day period, at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. Section 9607.

94. Respondent shall make all payments by forwarding a check to:

U.S. Environmental Protection Agency  
Region II  
ATTN: Superfund Accounting  
P.O. Box 361088M  
Pittsburgh, PA 15251

Checks should identify the name of the Site, the Site identification number, the account number, and the title of this Order. A copy of the check and/or transmittal letter shall be forwarded to the EPA Staff Attorney and Project Manager, at the addresses specified in Paragraph 85 b., above.

95. For the following major deliverables, stipulated penalties shall accrue in the amount of \$1,000 per day, per violation, for the first ten days of noncompliance; \$2,000 per day, per violation, for the 11th through 20th day of noncompliance; \$5,000 per day, per violation, for the 21st day through the 30th day; and \$15,000 per day, per violation, for all violations lasting beyond 30 days.

1. Draft Remedial Objectives Work plan
2. Draft Feasibility Study Work plan
3. Draft Feasibility Study
4. Draft Contaminant Transport Model (CTM) Work plan
5. Draft Kd Study Report
6. Draft NAPL Action Report
7. Draft Treatability Work Plan Deliverables
8. Draft Status Reports on Treatability Studies
9. Draft Treatability Study Report

10. Draft Memorandum that Identifies, Proposes, Screens, Evaluates and Documents Remedial Technologies and Alternatives

96. For the following deliverables, stipulated penalties shall accrue in the amount of \$750 per day, per violation, for the first ten days of noncompliance; \$1,000 per day, per violation, for the 11th through 20th day of noncompliance; \$2,500 per day, per violation, for the 21st day through the 30th day of noncompliance; and \$5,000 per day, per violation for all violations lasting beyond 30 days.

1. Identify Project Coordinator
2. Draft Community Relations Plan
3. Draft Remedial Objectives Report
4. Draft Kd Study Work Plan
5. Draft Methodology of Estimating Current Leachate Concentrations and Sorption Properties from TCLP/SPLP Results
6. Draft Calibration and Modeling Report for CTM
7. NAPL Action Plan
8. Operational Definition of NAPL, Revision 1
9. Draft Paleontological Investigation Work Plan
10. Draft Paleontological Investigation Report
11. Draft TCE/PCE Investigation Work Plan (for 1151/52)
12. Draft TCE/PCE Investigation Report (for 1151/1152)
13. Draft Background Groundwater Quality and Soil Work Plan
14. Draft Background Groundwater Quality and Soil Report
15. Draft Focused FS Source Area Reports
16. Draft Determination of Candidate Technologies and the Need for Treatability Studies Memorandum

97. For bi-weekly and two-month progress reports, stipulated penalties shall accrue in the amount of \$750 per day, per violation.

98. Respondent may dispute EPA's right to the stated amount of penalties by invoking the dispute resolution procedures under Section XXI herein. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent does not prevail upon resolution, all penalties shall be due to EPA within 60 days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid.

99. In the event that EPA provides for corrections to be reflected in the next deliverable and does not require resubmission of that deliverable, stipulated penalties for that interim deliverable shall cease to accrue on the date of such decision by EPA.

100. The stipulated penalties provisions do not preclude EPA from pursuing any other remedies or sanctions which are available to EPA because of the Respondent's failure to comply with this Order, including but not limited to conduct of all or part of the FS by EPA. Payment of stipulated penalties does not alter Respondent's obligation to complete performance under this Order.

### XXIII. RESERVATIONS OF RIGHTS AND REIMBURSEMENT OF OTHER COSTS

101. Respondent is not released from liability, if any, for any response actions taken beyond the scope of this Order regarding removals, other operable units, remedial design and remedial action of this operable unit, or activities arising pursuant to Section 121(c) of CERCLA.

102. EPA reserves the right to bring an action against Respondent for damages for injury to, destruction of, or loss of natural resources, including the costs of assessing such injury, destruction or loss resulting from release of hazardous substances at the Site for damages to natural resources, as defined in Section 101(6) of CERCLA, 42 U.S.C. Section 9601(6).

103. EPA reserves the right to bring an action against the Respondent under Section 107 of CERCLA for recovery of all response costs, including oversight costs, incurred by the United States at the Site that are not reimbursed by the Respondent, any costs incurred in the event that EPA performs the FS or any part thereof, and any future costs incurred by the United States in connection with response activities conducted under CERCLA at this Site.

104. EPA reserves the right to bring an action against Respondent to enforce the Past Response Costs and Future Response Costs reimbursement requirements of this Order, to collect any interest amounts due under Section XX, to collect stipulated penalties assessed pursuant to Section XXII of this Order, and to seek penalties pursuant to Section 109 of CERCLA, 42 U.S.C. Section 9609 for any and all violations of this Order.

105. Nothing in this Order is intended to be nor shall it be construed as a release or covenant not to sue for any claim or cause of action, administrative or judicial, civil or criminal, past or future, in law or in equity, which EPA may have against any person, firm, corporation, or other entity not a signatory to this Order.

106. Nothing in this Order shall affect the right of EPA to enter into any other Administrative Order on Consent and/or issue any other Administrative Order unilaterally to Respondent (and/or any other responsible parties for the Site) pursuant to CERCLA to require the performance of any additional response actions that EPA determines are necessary at the Site.

107. Except as expressly provided in this Order, each party reserves all rights and defenses it may have. Nothing in this Order shall affect EPA's removal authority or EPA's response or enforcement authorities including, but not limited to, the right to seek injunctive relief, stipulated penalties, statutory penalties, and/or punitive damages.

#### XXIV. RESOLUTION OF LIABILITY

108. Following satisfaction of the requirements of this Order, Respondent shall have resolved its liability to EPA for the Work it performed pursuant to this Order and for the payments it made pursuant to Section XIX Reimbursement of Costs.

#### XV. CONTRIBUTION PROTECTION

109. With regard to claims for contribution against Respondent for matters addressed in this Order, the Parties hereto agree that the Respondent is entitled to such protection from contribution actions or claims as is provided by CERCLA Section 113(f)(2) of CERCLA, 42 U.S.C. Section 9613(f)(2). Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, demands, claims, and causes of action which each party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a party hereto.

## XVI. DISCLAIMER

110. By signing this Order and taking actions and making payments under this Order, the Respondent does not necessarily agree with EPA's Findings of Fact and Conclusions of Law. Furthermore, the participation of the Respondent in this Order shall not be considered an admission of liability and this Order shall not be admissible as evidence of liability against the Respondent in any judicial or administrative proceeding other than a proceeding by the United States, including EPA, to enforce this Order or to enforce a judgment relating to this Order. Respondent retains its rights to assert claims against other potentially responsible parties at the Site.

## XXVII. OTHER CLAIMS

111. In entering into this Order, Respondent waives any right to seek reimbursement under Section 106(b) of CERCLA for any payments made pursuant to Section XIX. Reimbursement of Costs of this Order. Respondent also waives any right to present a claim under Section 111 or Section 112 of CERCLA for any payments made pursuant to Section XIX Reimbursement of Costs of this Order. This Order does not constitute any decision or preauthorization of funds under Section 111(a)(2) of CERCLA. Respondent further waives all other statutory and common law claims against EPA, including, but not limited to, contribution and counterclaims, relating to or arising out of conduct of the FS and payment pursuant to Section XIX Reimbursement of Costs, of this Order.

112. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm partnership, subsidiary or corporation not a signatory to this Order for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, pollutants, or contaminants found at, taken to, or taken from the Site.

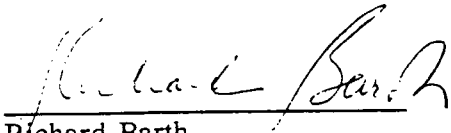
113. Respondent shall bear its own costs and attorneys fees.

## XVIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

114. The effective date of this Order shall be the date it is signed by EPA. EPA will make all reasonable efforts to notify Respondent in a timely manner of the date of signing of this Order.

## CONSENT

The signatory identified below certified that he or she is fully authorized to represent Respondent in this matter, to agree to the terms and conditions of this Order on behalf of Respondent and to bind Respondent to all of the terms and conditions of this Order. The person who has signed below also represents that by his or her signature, Respondent agrees to enter into this Order and to be bound by its terms.



Richard Barth  
Chairman of the Board,  
President and Chief Executive Officer  
Ciba-Geigy Corporation  
520 White Plains Road  
Tarrytown, New York 10591-9005

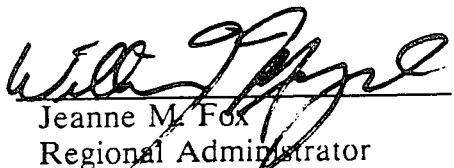
October 1,  
1995



## XXIX. TERMINATION AND SATISFACTION

115. At such time as EPA determines that all activities required by this Order, including the Work, additional work, payment of Past Response Costs and Future Response Costs, and payment of any interest and stipulated penalties demanded by EPA, have been satisfactorily completed, the Director, Emergency and Remedial Response Division, EPA Region II will notify Respondent that the requirements of this Order have been satisfied. The provisions of this Order shall be deemed satisfied when Respondent receives this written notice signed by the Director, Emergency and Remedial Response Division, EPA Region II, which states that all the actions and payments required by this Order have been satisfactorily completed.

For: U.S. ENVIRONMENTAL PROTECTION AGENCY



Jeanne M. Fox  
Regional Administrator  
U.S. Environmental Protection Agency  
Region II

October 18, 1995

## **APPENDIX 1**

### **STATEMENT OF WORK FOR CIBA-GEIGY FEASIBILITY STUDY (FS)**

This Statement of Work (SOW), and the milestones contained herein are in accordance with and are incorporated by reference into the Administrative Order on Consent for operable unit two (source areas) (hereinafter the Order) for the CIBA-GEIGY Superfund Site, (the Site), Toms River, New Jersey, between the United States Environmental Protection Agency (EPA) and CIBA-GEIGY Corporation (hereinafter Respondent).

#### **A. COMMITMENT BY RESPONDENT**

Respondent shall accept EPA's Remedial Investigation (RI) Report, dated December 1994, and Revised Draft Baseline Public Health Risk Assessment for Source Area Surface Soils Report, dated June 23, 1993, as the technical basis for its performance of a Feasibility Study (FS) at the Site. Respondent shall perform the FS, under EPA oversight, in accordance with the provisions of the National Contingency Plan (NCP). The FS shall also be in accordance with EPA's Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA (Interim Final) USEPA OERR (October 1988), and any subsequent guidance that the parties shall identify as appropriate for the conduct of the FS. The RI Report, the Baseline Risk Assessment, and the Final FS Report will, with the remainder of the Administrative Record, form the basis for the selection of the remedy for operable unit 2 (OU 2) to be documented in a Record of Decision (ROD). Feasibility Study (FS) activities performed by the Respondent pursuant to this Order shall meet any and all substantive requirements of applicable Federal, State and local laws.

#### **B. PERMITTING REQUIREMENTS FOR THE FEASIBILITY STUDY**

The Respondent shall be responsible for all applicable federal, state and local permits, including identification, application, and procurement of said permits dealing with the feasibility study. All work shall be performed in accordance with the substantive requirements of all applicable permits.

#### **C. PROJECT COORDINATOR**

Within 15 days after the effective date of this Order, Respondent shall notify EPA of its Project Coordinator who shall be responsible for the day-to-day management of all Work to be performed in accordance with this Order. The Project Coordinator shall have adequate technical and managerial experience to manage all Work described in this SOW. The Project Coordinator shall be the primary contact for EPA on matters relating to the Work at the Site and the Project Coordinator or designated back-up should be available for EPA to contact during all working days.

#### **D. FEASIBILITY STUDY OVERVIEW**

The Respondent shall complete a Feasibility Study in accordance with the provisions of the applicable provisions of the NCP. The FS and related activities will provide the framework for addressing the identified source areas of concern and how they relate to the OU1 Groundwater Extraction and Recharge System (GERS). It will incorporate the following major activities:

- Development of Remedial Objectives
- Completion of the NAPL Action Plan
- Development of a site-wide Contaminant Transport Model to:
  - ◊ Evaluate the significance of source areas to better understand existing contamination;
  - ◊ Assess and prioritize source areas and remedial strategies to ensure protection of human health and the environment; and
  - ◊ Monitor the efficiency and progress of the OU1 remedy.
- Additional site studies essential to defining the need for and extent of remedial actions and providing additional information to the Contaminant Transport Model
- Feasibility Study Scoping and Planning
- Treatability Studies
- Development and Screening of Remedial Technologies and Alternatives
- Detailed Analysis of Alternatives and the Feasibility Report

#### **E. REPORTING REQUIREMENTS**

The Respondent shall notify EPA in writing, on a biweekly basis, or any other schedule as determined appropriate by EPA, of the progress of FS activities, including the identification of any activities that are behind schedule, as well as, what actions are planned to bring the activities back on schedule. In addition, Respondent shall submit to EPA, a two month progress report that provides a detailed summary of the progress of the FS activities during the previous two month period.

#### **F. COMMUNITY RELATIONS PLAN**

Within 60 days after the effective date of this order the Respondent shall submit a draft Community Relations Plan for authorized representatives of the CIBA-GEIGY Technical Review Committee to monitor the progress of the FS. The Respondent will assist EPA in coordinating and conducting community relations activities as requested by EPA, including the distribution of draft and final work plans, reports, memoranda and technical information. In addition, EPA may request that the Respondent make its Project Coordinator or appropriate designee(s) available to inform EPA and the public of FS progress and plans. EPA shall be responsible for preparation of meeting minutes.

#### **G. COORDINATION WITH OPERABLE UNIT ONE**

Pursuant to the Record of Decision (ROD) for the OU 1 Groundwater Remedy (April 1989) as modified by an Explanation of Significant Differences (ESD) (September 1993), and agreed to in the April 18, 1994 settlement captioned United States v. CIBA-GEIGY Corporation, Civil Action No. 93-4675 (MLP) (hereinafter "Ciba Consent Decree"), Respondent is to install and operate an on-site 4.0 million gallon per day (MGD) Groundwater Extraction, Treatment and Recharge System (GERS). Activities under OU 2 will examine remedial alternatives for each Potential Source Area and Group of Source Areas that will enable EPA to select a remedy for each Potential Source Area and Group of Source Areas that will be protective of human health and the environment and facilitate the OU 1 goal of aquifer restoration. Since existing or potential releases from each Potential Source

Area and Group of Source Areas may effect the overall time frame for restoration of the aquifer, as part of the FS, Respondent's evaluation of remedial alternatives shall consider the operation of the GERS and provide a detailed evaluation of how remedial alternatives for each Potential Source Area and Group of Source Areas will facilitate the goal of aquifer restoration, as specified in the Ciba Consent Decree. In addition, as part of the FS, Respondent shall evaluate the effect of any NAPL remediation measures on the goal of aquifer restoration.

#### **H. WORK TO BE PERFORMED**

Respondent shall perform FS activities according to the requirements described below. A time table for the submission of FS related deliverables is presented in Attachment 1. Draft report submission time requirements shall be detailed in the work plan submitted for approval for each activity. The Respondent shall submit all deliverables described in Attachment 1 of the SOW in draft form.

##### **Task 1.0 Remedial Objectives**

The first task of the FS effort will be to establish site remedial objectives. This shall consist of development of a Remedial Objectives Plan, identification of ARARs and TBCs, completion of modeling support studies, development of a Site Contaminant Transport Model, and preparation of the Remedial Objectives Report.

##### **1.1 Remedial Objectives Plan**

Within 90 days after the effective date of this Order, Respondent shall submit to EPA a draft Remedial Objectives Plan which outlines the development of remedial objectives and a schedule of all major activities necessary to develop the remedial objectives and how these Remedial Objectives will be incorporated into the FS process to ensure that the selected remedy(ies) achieves these Remedial Objectives. The Respondent will submit this plan in the Draft Feasibility Study Work Plan. At a minimum, the Remedial Objectives Plan shall identify the following: Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs); all work and modeling efforts which will generate information to be used in the development of Site specific remedial objectives, and provisions for revising remedial objectives during the FS process, as appropriate.

The Respondent shall evaluate various compliance points based on factors, including, but not limited to, the Contaminant Transport model results, land use, exposure pathways, ARARs, TBCs, institutional controls, remedial alternatives analysis, achievement of aquifer restoration (including aquifer cleanup times) as specified in the Ciba Consent Decree, and any other factors developed during the FS process that are deemed appropriate by EPA and the Respondent. With regard to Contaminant Transport Modeling, such modeling shall include simulations of the contaminant transport to a compliance point at the vertical interface between the Waste Materials and the water table, for each Potential Source Area and Group of Source Areas, as well as a sensitivity analysis at various points down-gradient of each Potential Source Areas and Group of Source Areas. EPA shall make the final determination of the exact compliance point(s) based on the evaluation results, achievement of aquifer restoration as specified in the Ciba Consent Decree, and other factors EPA determines as appropriate.

## **1.2 ARARs and To Be Considered (TBCs) Identification**

In the plan described in 1.1, Respondent shall include a discussion on identified ARARs and To Be Considered (TBCs). This discussion will be refined as necessary later as part of 1.5, Draft Remedial Objectives Report and 5.1 Refined Remedial Action Objectives. ARARs and To Be Considered (TBCs) will be identified from federal and state regulations and appropriate guidance documents, with additional input from EPA and the New Jersey Department of Environmental Protection (NJDEP). This Task shall include an evaluation of ARARs and TBCs required for the selection of appropriate remedies for each Potential Source Area and Group of Source Areas at the Site. In accordance with the RI/FS Guidance (EPA, 1988), the following three functional groups of ARARs will be evaluated.

- Chemical-specific ARARs: health or risk based values or methodologies which, when applied to site-specific conditions, will result in the establishment of numerical values;
- Location-specific ARARs: restrictions placed on the concentration of hazardous substances for the undertaking of activities solely because they are in specific locations;
- Action-specific ARARs: technological or activity based requirements or limitations on actions with respect to hazardous substances.

## **1.3 Modeling Studies**

The modeling studies described in 1.3 will provide input data to the Contaminant Transport Model, described in 1.4, which will be used to evaluate the overall impact of each Potential Source Area and Group of Source Areas on aquifer restoration, as specified in the Ciba Consent Decree. These modeling studies will involve quantifying expected leaching, desorption and mass leaching and loading of contaminants of concern in order to develop Site specific remedial objectives for each Potential Source Area and Group of Source Areas. The Contaminant Transport Modeling Work Plan shall identify contaminants of concern that will be evaluated as part of the modeling studies.

**1.3.1 Kd Study** - The Kd Study will determine the desorption of constituents from soil into water and shall specify technically-sound procedures for the determination of site-specific Kd values or other appropriate representations for the contaminants of concern. The Respondent has previously submitted to EPA a draft Kd Study Work Plan, which was approved by EPA in July 1995. Respondent shall implement the approved Kd Work Plan.

In accordance with the approved Kd Study Work Plan schedule, Respondent shall submit a draft Kd Study Report to document study results and the significance of the results for the CTM and the FS.

**1.3.2 Method for Estimating Current Leachate Concentrations and Sorption Properties from TCLP/SPLP Results** - Respondent has previously submitted to EPA a draft Method for Estimating Current Leachate Concentrations and Sorption Properties from TCLP/SPLP Results to determine mass loading inputs to the

contaminant fate and transport model (CTM). In the event that EPA determines that this methodology is unacceptable, Respondent shall perform an evaluation of alternate methodologies.

#### **1.4 Contaminant Transport Model**

The objectives of the CTM shall be to develop a fate and transport model to evaluate the impact of each Potential Source Area and Group of Source Areas on aquifer restoration, as specified in the Ciba Consent Decree. A full range of processes and data shall be considered in developing the model, and the model shall be capable of evaluating various remedial alternatives that may be considered during the FS, including natural attenuation of contaminants through demonstrated dispersion and degradation pathways.

##### **1.4.1 CTM Work Plan**

Within 90 days after the effective date of the Order, Respondent shall submit to EPA a draft Contaminant Transport Model (CTM) Work Plan which will describe all Operable Unit 2 (OU 2) computer modeling related activities and include a schedule of activities including report submittals. The CTM Work Plan must describe those activities necessary to model all contaminants of concern in order to: 1) evaluate the impact on aquifer restoration, as specified in the Ciba Consent Decree, of each Potential Source Area and Group of Source Areas, including any new areas that are discovered such as the standpipe burner area, or any other area discovered during the FS; 2) assess and prioritize each Potential Source Area and Group of Source Areas according to the present and future impact of each Potential Source Area and Group of Source Areas on aquifer restoration; 3) assess, evaluate and prioritize remedial strategies for all remedial alternatives considered during the FS.

The CTM Work Plan shall be based on EPA guidance titled Assessment Framework for Ground-Water Model Applications (OSWER Directive 9029.00, EPA 500-B-94-003), and shall include but not be limited to the following components: Saturated Zone Transport Model (SZM) for the saturated zone; Vadose Zone Model (VZM) for the unsaturated zone; a NAPL Dissolution Model; and a description of the existing Saturated Zone Flow Model (SFM).

1. The SZM component of the Work Plan shall include the following: 1) description of horizontal and vertical model domain and grid discretization; 2) description of flow and mass transport input parameters and their justification (e.g. hydraulic conductivities, storage coefficients, hydraulic stresses, dispersivity, absorption coefficients, organic carbon partition coefficients, recharge rates, half lives, etc.); 3) description of boundary conditions (e.g. mass fluxes from the vadose zone, hydraulic inflows and outflows, etc.); 4) method of calibration; 5) presentation format and interpretation techniques for calibration results; 6) method for sensitivity analysis of model results to input parameter values; 7) discussions of processes anticipated in the saturated zone; 8) codes reviewed and the justification for using a particular code versus other codes; 9) plan for refinement of the SZM based on data from the Kd and leaching studies

described above, the NAPL Action Plan (see Task 2.0), and any other studies, information or data determined appropriate by EPA.

2. The VZM component of the Work Plan shall include the following: 1) a description and discussion of reviewed models and their limitations within the requirements of the CTM; 2) discussion of codes reviewed and a justification for a proposed model; 3) discussion of input parameters and their justification (e.g. dispersivity, organic carbon partition coefficients, recharge rates, half lives, etc.); 4) descriptions of boundary conditions 5) format for presentation of results; 6) protocol for sensitivity analysis of input parameters; 7) discussion of the processes anticipated in the unsaturated zone; 8) plan for refinement of the VZM based on data from the Kd and leaching studies described above, the NAPL Action Plan (see Task 2.0), and any other studies, information or data determined appropriate by EPA..

3. The CTM Work Plan shall include a description of the Draft NAPL Dissolution Model, which shall be developed to evaluate the impact of NAPL contaminant source areas on aquifer restoration, as specified in the Ciba Consent Decree. This component of the CTM Work Plan shall discuss the Operational Definition of NAPL (ODN) that is to be used as a screening tool. Results of this modeling effort will be used to determine if further refinement of the ODN is appropriate.

4. The CTM Work Plan shall include a detailed description of all hydrogeological and flow parameters (e.g., hydraulic conductivity, storage coefficients, hydraulic fluxes, calibrated heads, etc.) to be incorporated into the CTM from the earlier flow model developed for the OU1 project and submitted to EPA.

**1.4.2** Respondent shall calibrate the CTM against existing Site groundwater quality data. Respondent shall submit to EPA a draft Interim Modeling and Calibration report within 90 days after approval of the CTM Work Plan describing calibration activities conducted to date.

**1.4.3** A Draft Calibration and Modeling Report for the CTM will be submitted in accordance with the CTM Work Plan Schedule. Once satisfactory CTM calibration is achieved, Respondent will determine the impact of each Potential Source Area and Group of Source Areas on aquifer restoration, as specified in the Ciba Consent Decree, and on the overall OU 1 remedy including the time estimated to achieve the goal of aquifer restoration. Results of the calibration effort and significant modeling results will be submitted to EPA in a draft CTM Report according to the schedule outlined in the approved CTM Work Plan.

## **1.5 Remedial Objectives Report**

After completion of tasks 1.1, 1.2, 1.3, and 1.4, Respondent shall develop remedial objectives using the contaminant transport model, ARARs and TBCs and other appropriate information. This evaluation will identify, to the extent possible, ARARs

and TBCs and develop Site specific remedial objectives for each Potential Source Area and Group of Source Areas, taking into account the approved CTM Calibration and Modeling Report. The information developed will be incorporated in a draft Remedial Objectives Report. There will be a refinement of this effort, if necessary, as part of Sections 5.1 and 5.4 of the SOW.

## **Task 2.0 NAPL Action Plan and Related Studies**

Respondent shall perform field investigations to determine the extent of NAPL source area contamination and to provide data adequate for evaluation of appropriate remedial alternatives for NAPL. These studies will include implementation of the NAPL Action Plan, a paleontological investigation of clay, investigation of PCE/TCE detection in Wells 1151 and 1152, and completion of a background groundwater and soil quality study. Respondent will determine the impact of releases from NAPL source areas on aquifer restoration, as specified in the Ciba Consent Decree, and will evaluate the effect of NAPL remedial alternatives on the overall OU 1 remedy including the time estimated to achieve the goal of aquifer restoration, as specified in the Ciba Consent Decree. In addition, Respondent shall implement the approved submittal entitled Operational Definition of NAPL Revision 1, in accordance with the terms of this Order. This definition is to be used as a screening tool to aid in the determination of potential NAPL sample locations for the NAPL Action Plan field investigation.

### **2.1 Approved NAPL Action Plan**

The Ciba Consent Decree for OU1 requires that a NAPL Action Plan be developed to present methodologies for locating the type and extent of NAPL.

The Respondent shall perform and implement the approved NAPL Action Plan dated December, 1994, in accordance with the terms of the Ciba Consent Decree and this Order. Within 30 days after the effective date of this Order, Respondent shall submit a revised schedule for the approved NAPL Action Plan. Upon approval by EPA, the revised schedule shall supersede the schedule in the approved NAPL Action Plan. Within 90 days after NAPL Action Plan activities have been fully performed and implemented, Respondent shall submit a draft NAPL Action Report which describes the results of the NAPL Action Plan studies. The NAPL Action Report shall include the following information:

- identification and definition of all NAPL source areas that may serve as a source of groundwater contamination;
- to the extent possible, identification and definition of the three-dimensional envelope within which NAPL is present; and
- obtain the necessary data to be used during the FS to develop and evaluate NAPL remedial alternatives.

### **2.2 Paleontological Investigation**

Within 60 days after the effective date of this Order, Respondent shall submit a draft Paleontological Investigation Work Plan of the yellow clay and similar aquitards in the vicinity of the drum disposal area, the active landfill, and all other source areas. The yellow clay, Transitional Unit, and Upper Kirkwood members will all be included in the study, although the initial focus will be on the yellow clay,



particularly in the vicinity of the drum disposal area. The study will evaluate the continuity of relevant aquitards on the Site by establishing their environment of deposition through the presence or absence of indicator fossils or microstratigraphic analysis. Data regarding the physical characteristics of the aquitards will be collected as required by the FS.

After the completion of the Paleontological Investigation, Respondent shall submit a draft Paleontological Investigation Report describing the results of the investigation in accordance with the schedule in the Paleontological Investigation Work Plan.

### **2.3 TCE/PCE Investigation for Wells 1151/52**

Respondent shall implement the approved TCE and PCE Investigation Work Plan in accordance with the terms of this Order. Pursuant to the Work Plan, Respondent shall further define the nature and extent of TCE and PCE as a source of contamination in the perched groundwater near Wells 1151 and 1152 adjacent to the Active Industrial Waste Landfill (IWL). Respondent shall also gather additional data on the hydraulic conditions present in the Upper Cohansey that may control the migration of TCE and PCE. The data collection activities should include the following:

- a soil gas survey along the southern border of the IWL;
- soil gas and groundwater samples at selected locations for analysis of TCE and PCE;  
samples at the Upper Cohansey/Yellow Clay contact for confirmatory stratigraphic information; and
- a short-term pumping test and time-dependent groundwater sampling program at Well 1152.

Upon completion of the TCE/PCE Investigation, Respondent shall submit a draft TCE/PCE Investigation Report outlining the results of the study, in accordance with the schedule in the TCE/PCE Investigation Work Plan.

### **2.4 Background Groundwater and Soil Quality Study**

Within 90 days after the effective date of the Order, Respondent shall submit to EPA a draft Work Plan to investigate background groundwater and soil quality involving VOC, SVOC, and metals concentrations in the groundwater and soil in non-industrial background areas at the Site. In addition, the Work Plan shall outline an evaluation of background groundwater and soil quality involving Tentatively Identified Compounds in the groundwater and soil in non-industrial background areas at the Site, as determined appropriate by EPA. Upon completion of the Groundwater and Soil Quality Study, Respondent shall submit an assessment of data in a draft Background Groundwater and Soil Quality Report, in accordance with the schedule in the Work Plan.

### **Task 3.0 Feasibility Study Scoping and Planning**

The Respondent shall perform the necessary scoping and planning activities described below:

### **3.1 Feasibility Study Work Plan**

Within 90 days after the effective date of the Order, Respondent shall submit a draft FS Work Plan to define the content, scope, schedule and sequence of the FS activities. EPA may require the FS Work Plan to be modified during the FS as studies are completed and new data becomes available.

The draft FS Work Plan shall provide information with respect to, among other items, a description of the activities contained in Tasks 1.0 through 6.0, including those deliverables described in Attachment 1 of the SOW.

Respondent shall submit to EPA a schedule for FS completion which will be included in the draft FS Work Plan. Subject to EPA approval, Respondent may modify the FS schedule to accommodate new data generated from ongoing activities that comprise the FS.

The draft FS Work Plan will define the overall methods and scope for completion of the FS, the names, roles and resumes of all contractors and subcontractors selected to perform the activities in the development and implementation of the FS treatability studies, as well as the internal review and coordination mechanisms and end-product expectations. The draft FS Work Plan will also define the steps that will be taken to screen, develop and evaluate remedial alternatives. Criteria for identification and evaluation of remedial technologies will be defined, citing the most recent EPA guidance for each remedial technology.

### **Task 4.0 Treatability Studies**

As part of the Work, treatability studies may be necessary to assist in the detailed analysis of alternatives. A literature survey and the need for treatability studies will be evaluated by the Respondent. If EPA determines that treatability studies are necessary, the Respondent shall perform such studies in accordance with EPA guidance, or appropriate scientific protocol.

#### **4.1 Determination of Candidate Technologies and the Need for Treatability Studies**

According to the schedule outlined in the FS Work Plan, the Respondent shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate remedial action technologies. If candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated on the basis of available information, the Respondent's literature survey will evaluate the need for treatability studies. The Respondent shall document, in a draft memorandum, Candidate Technologies/Process Options, the information gathered during the literature survey, and technologies proposed for further evaluation, including those that will require treatability studies. Specific data requirements and objectives for technologies requiring treatability studies shall be determined and refined during the FS process.

#### **4.2 Quality Assurance and Quality Control, Health and Safety and Additional Plans**

According to the schedule outlined in the FS Work Plan, Respondent shall prepare and submit Quality Assurance and Quality Control (QA/QC) Plans, and Health and Safety Plans (H&S) work plans required for the conduct of all field and laboratory studies related to completion of the FS, including those activities outlined in Section 3.0 above, as well as for any other studies determined necessary by EPA. Plans will be in accordance to the latest EPA guidance, and will be submitted according to the schedule outlined in the FS Work Plan. Plans already developed and approved by EPA (i.e. QA/QC and H&S Plans, or various investigative work plans for OU 1 and OU 2, etc.) will be used to the extent possible in preparing the above plans.

### **4.3 Treatability Study Work Plan Deliverables**

#### **4.3.1 Treatability Study Work Plan**

If EPA determines that treatability studies are a necessary part of the Work, then, according to the schedule outlined in the FS Work Plan, Respondent shall prepare a draft Treatability Study Work Plan. The draft FS Work Plan shall include the names, roles and resumes of all contractors and subcontractors selected to perform the treatability studies. This Work Plan shall describe the remedial technologies to be evaluated, schedule of all activities covered by the Treatability Study Work Plan, test objectives, experimental procedures, treatability conditions to be tested, how treatability test data will be used, measurements of performance, analytical methods, data management and analysis, health and safety and management of test residuals. All treatability study plans shall follow EPA guidance and requirements. If laboratory or pilot-scale treatability studies are to be performed, the draft Treatability Study Work Plan shall describe installation and start-up, operation and maintenance, procedures and operating conditions to be tested, a sampling plan to determine testing performance, a QA/QC plan, and a detailed health and safety plan. Plans already developed and approved by EPA (i.e. QA/QC and H&S Plans, or various investigative work plans for OU 1 and OU 2, etc.) will be used to the extent possible in preparing these plans. All treatability study work plans will provide a proposed schedule of the study and the impacts of the study on the overall FS project completion schedule. If off-site testing is to be performed, permitting requirements will be addressed.

#### **4.3.2 Status and Draft Reports on Treatability Studies**

Status reports on treatability studies will be submitted by the Respondent for EPA review on a periodic basis. Status reports will be prepared by the Respondent at appropriate milestones during the Work as outlined in the Treatability Study Work Plan. Following completion of each treatability study, Respondent shall analyze and interpret the test results in a draft Reports on Treatability Studies. Depending on the sequence of activities as required by the FS Work Plan Schedule, the draft Reports on Treatability Studies may be submitted as part of the draft FS Report or as a separate deliverable.

### **Task 5.0 Development and Screening of Remedial Alternatives**

Respondent shall screen remedial action alternatives for the Site in order to develop a list of potentially effective options that will undergo further evaluation.

Alternatives will be developed by assembling combinations of technologies identified as applicable to the media and the contaminants of interest. The range of alternatives shall include, at a minimum, options using treatment to permanently reduce or eliminate the toxicity, mobility, or volume of wastes; options varying the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative as required by the NCP. Natural attenuation of contaminants will also be considered. The rationale leading to the development of the list of remedial alternatives will be documented.

#### **5.1 Refined Remedial Action Objectives**

According to the schedule outlined in the FS Work Plan, Respondent shall review and, if necessary, propose revisions to the Remedial Objectives Report described in 1.5 of the SOW. Any proposed changes to ARARs and TBCs criteria that were previously established shall be submitted to EPA in a draft Memorandum as discussed in 5.4 of the SOW.

#### **5.2 General Response Actions**

According to the schedule outlined in the FS Work Plan, Respondent shall develop general response actions for each Potential Source Area and Group of Source Areas. The Respondent shall outline those general response actions such as treatment, excavation, containment, pumping, bioremediation, or other remedial actions, singly or in combination, determined necessary to satisfy the remedial action objectives. The results of this task shall be documented in the draft memorandum discussed in 5.4.

#### **5.3 Identifying Zones and Media of Concern**

According to the schedule outlined in the FS Work Plan, Respondent shall identify and provide a detailed description of zones and media of concern. Zone is defined as the three-dimensional envelope delineated as part of the Remedial Investigation or subsequent studies, to be used, where feasible, as an estimation of the mass and volume of each Potential Source Area and Group of Source Areas. This identification may include contaminated soils, waste, sludges and NAPL. The Respondent shall evaluate protectiveness (as identified in the remedial action objectives), aquifer restoration, the chemical and physical characterization of source areas, the previously conducted baseline risk assessment, the site remedial objectives, modeling results and a sensitivity analysis.

#### **5.4 Identify, Screen and Document Remedial Technologies and Remedial Alternatives**

According to the schedule outlined in the FS Work Plan, Respondent shall submit a draft Memorandum that Identifies, Proposes, Screens, Evaluates and Documents Remedial Technologies and Remedial Alternatives applicable to each general response action. The evaluation will utilize the information developed under subtasks 4.1, through 5.3. General response actions will be refined as necessary based on the technology evaluation. Technologies will be evaluated on the basis of effectiveness, implementability and cost factors to select and retain one or, if necessary, more representative processes for each technology type. Technology

types and process options will be summarized in the draft memorandum. Reasons for eliminating technologies must be specified.

Respondent shall assemble selected representative technologies into remedial alternatives for each Potential Source Area and Group of Source Areas. Respondent will then perform, as appropriate, a final screening process based on effectiveness, implementability, and relative cost. The screening of alternatives will present a range of alternatives protective of human health and the environment, and will be retained for further analysis.

The draft Memorandum shall also summarize the work performed and the results of each activity under this task, including documentation of final remedial action objectives and preparation of an alternatives array summary. The alternatives array shall outline and compare a range of alternatives to be considered in the detailed analysis. The Respondent shall document the methods, rationale, and results of the alternatives screening process.

#### **Task 6.0 Detailed Analysis of Alternatives and the FS Report**

According to the schedule outlined in the FS Work Plan, Respondent shall conduct a detailed analysis of the retained alternatives and present such analysis in the draft FS report. The draft FS report shall reference previously approved reports pertaining to the FS. A separate draft FS Report may be required for each Potential Source Area and Group of Source Areas. This analysis shall consist of an individual assessment of each alternative retained against a set of nine evaluation criteria, provided below, and a comparative review between alternatives using the same criteria.

The nine evaluation criteria are as follows:

- overall protection of human health and the environment;
- compliance with ARARs;
- long-term effectiveness and permanence;
- reduction of toxicity, mobility or volume;
- short-term effectiveness;
- implementability;
- cost;
- State acceptance; and
- community acceptance.

For each alternative, Respondent shall provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs and TBCs associated with each alternative; (2) a discussion of the nine criteria outlined above; and (3) results of the comparative analysis. Since Respondent does not have direct input on criteria related to State acceptance and community acceptance, these two criteria will be addressed by EPA after completion of the Draft FS Report.

The Respondent shall refer to the appropriate RI/FS Guidance for an outline of the report format and the required report content. In accordance with paragraph 34 in the AOC, upon EPA's approval of the draft FS Report, Respondent shall submit

to EPA a final FS Report which will detail each step of the FS and provide thorough documentation of the process leading to the identification of those alternatives that best achieve the remedial objectives.

Respondent shall prepare and submit any additional site studies that EPA determines are necessary to define the nature and extent of contamination in each Potential Source Area and Group of Source Areas, and field demonstrations of potential remedial actions that EPA determines are necessary to address such source areas, and/or any additional studies that EPA determines may be necessary to support the FS.

## ATTACHMENT 1

### TIMETABLE OF DELIVERABLES

- |  |   |
|--|---|
| 1. Biweekly and Two-month Progress Reports   |   |
| 2. Identify Project Coordinator  | 15 days after AOC                       |
| 3. Draft Community Relations Plan  | 60 days after AOC                       |
| 4. Draft Remedial Objectives Work Plan   | 90 days after AOC                       |
| 5. Draft Remedial Objectives Report  | Schedule in FS WP                       |
| 6. Draft Kd Study Work Plan  | Approved 7/95                           |
| 7. Draft Kd Study Report   | Schedule in Kd WP                       |
| 8. Draft Methodology for Estimating Current Leachate Concentrations and Sorption Properties from TCLP/SPLP Results | Submitted 5/95                          |
| 9. Draft Contaminant Transport Model (CTM) Work Plan   | 90 days after AOC                       |
| 10. Draft Calibration and Modeling Report for CTM  | Schedule in CTM Work Plan               |
| 11. Draft Interim Calibration and Modeling Report  | 90-days after Approval of CTM Work Plan |
| 12. NAPL Action Plan   | Approved 12/94                          |
| 13. Revised Schedule for Approved NAPL Action Plan   | 30 days after AOC                       |
| 14. Operational Definition of NAPL, Revision 1   | Approved 5/17/95                        |
| 15. Draft NAPL Action Report   | 90 days after NAPL study completed      |
| 16. Draft Paleontological Investigation Work Plan  | 60 days after AOC                       |
| 17. Draft Paleontological Investigation Report   | Schedule in Paleo WP                    |
| 18. Draft TCE/PCE Investigation Work Plan(for 1151/52)   | Approved 6/95                           |
| 19. Draft TCE/PCE Investigation Report (for 1151/1152)   | Schedule in TCE/PCE WP                  |
| 20. Draft Background Groundwater and Soil Quality Work Plan  | 90 days after AOC                       |

21. Draft Background Groundwater and Soil Quality Report S c h e d u l e i n BGWSQWP
22. Draft Feasibility Study Work Plan (and FS Schedule) 90 days after AOC
23. Draft Focused FS Source Area Reports Schedule in FS WP
24. Draft Determination of Candidate Technologies and the Schedule in FS WP  
Need for Treatability Studies Memorandum
25. Draft Treatability Work Plan Deliverables Schedule in FS WP
26. Draft Status Reports on Treatability Studies Schedule in TS WP
27. Draft Treatability Study Report Schedule in TS WP
27. Draft Memorandum that Identifies, Proposes, Screens Schedule in FS WP  
Evaluates and Documents Remedial Technologies  
and Alternatives
28. Draft FS Report Schedule in FS WP